Current Baseline	**RBES Vision**	**Revised RBES Vision based on community input**	**DOE-RL Revised Recommendations**
Variance 1) Cleanup the 100 Area Waste Sites to achieve Remedial Action Objectives that are based on CLUP Conservation and Preservation land use exposure scenarios			
• Unrestricted surface use. • Exposure scenario based on rural residential use – Farming with 36.5 inches of annual irrigation and precipitation • Future ground water used for drinking. • Achieves 15 mrem/yr (3x10-4 risk based on EPA guidance) and 1x10-6 risk from other contaminants. • Assumed to be protective of ecological resources. • No decay of radionuclides.	• Cleanup based on Conservation and Preservation land use exposure scenarios for recreational, non-resident park ranger and tribal activities, including fishing. • No ground water use for drinking water or irrigation until reach MCLs (4mrem/yr). • Meet CERCLA risk range (10-4 to 10-6 risk) for radionuclides and other contaminants and protect ecological resources for CLUP land uses.	• Cleanup based on Conservation and Preservation land use exposure scenarios for recreational, resident park ranger and tribal activities, including fishing for the next 50 years. Beyond 50 years unlimited use is anticipated. • Radioactive decay will occur and should be accounted for in the risk estimation process. • Meet CERCLA excess cancer risk range (10-4 to 10-6) for radionuclides and other carcinogens and protect ecological resources. Future	1. The recommendation for burial grounds and waste sites is to continue implementing the current RODs for interim action. ●It is not deemed cost effective or protective of the environment to pursue the RBES Vision option (Containment and/or monitoring of some waste sites instead of excavation) for waste sites and burial grounds based on the facts bulletized below and the amount of resistance DOE will receive from regulators and community. ● A 1999 Focused Feasibility

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• Excavate waste sites to at least 15 feet depth and to bottom of burial grounds and dispose at ERDF. • Return ground water to beneficial drinking water use, based on 4 mrem/yr (MCL) for radionuclides, if practicable. • Transfer post remediation land to other federal agency to manage as part of the National Monument.	• Radionuclide decay assumed. • Containment and/or monitoring of some waste sites instead of excavation. • No further degradation of ground water. • Restore ground water to beneficial drinking water use if practicable. • Transfer post remediation land to other federal agency to manage as part of the National Monument	land uses listed in the CLUP do not influence the ecological exposure scenarios. • Meet CERCLA hazard indices (HQ<1) for radionuclides and other toxic contaminants and be protective of ecological resources. • Excavation and placement into engineered facilities is preferred to protect groundwater and to cease further degradation and damage. • Implementation of the Interim Action RODs will be adequate as final remedies for the source operable units if they meet final remedial action objectives. • Monitoring will be required whenever waste are left in place to verify robustness of remedial action. • No further degradation of ground water, meet ARARs	Study (DOE/RL-1999-XX) evaluated capping 16 of the large burial grounds. It was found to be protective and cost effective. ● However, since the 1999 Focused Feasibility Study, it has been learned through experience that the costs of excavating the large burial grounds may go down as much as 50% to 70%. In addition, 9 of these large burial grounds are fairly close to groundwater (ranging from -1 foot to 23 feet to groundwater) and some contain long lived radionuclides. ● Of the 7 remaining burial grounds that contain short lived radionuclides and are at least 50 feet above groundwater, five of these may be cheaper to excavate than cap (including characterization and long term monitoring costs). 2. DOE-RL recommends

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		and restore ground water to beneficial drinking water use when practicable. Follow process outlined in State and Federal regulations to establish protective limits when ARARS cannot be met. • Transfer post remediation unrestricted use land to other federal agency to be managed as part of the National Monument.	expediting the River Corridor Risk Assessment in support of final RODs. ● Expedite final risk assessments and final RODs. Develop pathway analysis and exposure factors for the 100 Area CLUP identified land-use scenarios. In addition, analyze multiple scenarios considering input from the 100 Area End State Workshop. ● Five year reviews will address effectiveness of the remedy including any institutional controls.
Variance 7) Leave reactor pipelines in the Columbia River and Reactor Cores in place based upon CLUP Conservation and Preservation Land use exposure scenarios			
• Allow decay of activation products in covered reactor	• Meet criteria for Conservation and Preservation land use	• Meet criteria for Conservation and Preservation land use	1. DOE-RL recommends that 8 of 9 reactors be cocooned and left in

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cores for 75 years. • Demolish reactors down to shield walls and install 75 year roof ("cocooning"). • Potentially remove reactor remains after 75 years for disposal in 200 Area Core Zone. • Institutional controls until removal of reactor cores. • Engineering evaluation of reactor cooling water discharge pipeline may propose removal and disposal (possibly in ERDF).	exposure scenarios for 100 Area as described in Variance #1. • Reactor cores decay in place. • Reactor pipelines left in place and stabilized.	exposure scenarios for 100 Area as described in Variance #1. • Evaluate future remedial action for reactor cores following up to 75 years of insitu decay. Options should include leaving decayed cores in place and moving decayed cores as multiple shipments. Evaluation should be completed during EM cleanup mission. • Evaluate human health and ecological risk and hazards presented by reactor pipelines. Analysis will include leaving the pipeline in place, stabilizing the pipeline in place, pipeline removal impacts and the potential to release hazardous and radioactive contaminants as the pipeline corrodes. Leave stabilized pipe lines in place if risk levels are within ARARs. • Several stakeholders and	place to allow radioactive decay. DOE should make a final decision on whether to cut up and move reactor cores to Central Plateau after sufficient decay prior to cleanup completion and commit future funds toward the final decision. Evaluation should be completed during EM cleanup mission. 2. DOE-RL should continue to keep the B reactor in its current configuration until funding is secured to support a museum. ● Should the support not materialize we recommend that B reactor follow the same path as described above in number 1. Cocooning of B reactor could be started as soon as fiscal year 2007 but would be finished with the remainder of the 100 Area cleanup completions.

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		Tribal governments expect pipelines to be removed from the river.	3. DOE-RL recommends the decision for the reactor pipelines in the river should be made via the CERCLA process. ● Capping the pipeline would be an alternative that is evaluated and if shown effective could be chosen as the remedy. ● An engineering evaluation is due to the regulators in July 2005.
New) IROD requires Monitored Natural Attenuation for meeting groundwater restoration goals; use Pump and Treat Remediation Technology to reduce flux of strontium-90 (Sr-90) to the River;			
• IROD requires monitored natural attenuation for meeting groundwater restoration goals; use pump and treat remediation	• Maintain decision for Monitored Natural Attenuation to meet CERCLA groundwater restoration goals. Preclude groundwater consumptive use	• Preclude groundwater consumptive use at 100-N for 50 years by maintaining federal ownership. • Establish institutional controls	1. DOE-RL recommends the following: (1) Pursue Monitored Natural Attenuation as the final record of decision for that portion of the plume identified in the

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technology to reduce flux of strontium-90 (Sr-90) to the river. • Evaluate alternative technologies to reduce flux of Sr-90 to the river; evaluate ecological risk and remove hydrocarbon free product in wells when present. • Natural Attenuation by radioactive decay of 30-year half-life Sr-90 will achieve drinking water Maximum Concentration Levels (MCLs) in ground water in about 250 years.	at 100-N for 250 years by maintaining federal ownership and using institutional controls in the ROD and land transfer/management agreements. • Perform planned ecological risk assessment and test alternatives for reducing Sr-90 flux to the river • Implement alternative treatment technologies if, and only if, human and ecological risk is determined to exceed ARARS and technologies are effective and efficient in meeting ARARS. • Discontinue pump-and-treat system. • There is no apparent safe, effective and efficient alternative to meet aquifer restoration goals that is clearly better than MNA and water is not a drinking water source. • Monitoring costs during	to prevent exposure to contaminated groundwater beyond 50 years, if remedial actions are proven ineffective. • Complete planned ecological risk assessment, human health risk assessment and conduct field scale treatability studies for reducing contaminant flux to the river and reducing groundwater concentrations. • Develop focused feasibility study to present remedial options for meeting remedial action objectives that are protective of human health and the environment that minimize long term damage. • Implement alternative treatment technologies to limit flux to river and/or minimize resource damage. • Place existing pump and treat system into cold standby and define restart criteria if final selected option fails to meet	ITRD Remedial Options Evaluation Report that is not expected to reach the Columbia River; (2) Proceed with the planned ecological risk assessment; (3) Proceed with the planned tests for assessing alternative technologies designed to reduce flux of Sr-90 to the river (In-Situ permeable reactive barrier technology and phytoremediation); (4) Put Pump and Treat system in cold standby during tests and continue ground water monitoring of plume; (5) Evaluate the new technologies for effectiveness in reducing flux of Sr-90 to the river, including human and ecological risk reduction return for the cost of implementing alternative(s) as compared to P&T and Monitored Natural Attenuation options; (6) Utilize established CERCLA processes to determine ROD.

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	restoration period are expected to be the same for current and natural attenuation remedy.	performance criteria. • Discontinue pump-and-treat system following construction of remedial action performance monitoring system and development of monitoring performance criteria. • Stakeholders have expressed a desire for technology development for aquifer restoration of this plume.	